# STATEMENT OF BASIS

**Geismar Plant**
**Praxair, Inc.**
**Geismar, Ascension Parish, Louisiana**
**Agency Interest Number: 2218**
**Activity Number: 20080001**
**Proposed Permit 0180-00031-V3**

## I. APPLICANT:

**Company:**
Praxair, Inc.
P.O. Box 230, Geismar, LA 70734

**Facility:**
Geismar Plant
LA Hwy 75, Ave. E, Geismar, Ascension Parish, Louisiana
Approximate UTM coordinates are 691.23 kilometers East and 3444.23 kilometers North, Zone 15

## II. FACILITY AND CURRENT PERMIT STATUS:

Praxair Inc. (Praxair) owns and operates an industrial gas and chemical manufacturing facility in Geismar, Louisiana under Permit No. 0180-00031-V2 issued January 10, 2008.

## III. PROPOSED PERMIT / PROJECT INFORMATION:

### Proposed Permit

A permit application and Emission Inventory Questionnaire (EIQ), dated May 12, 2008, along with supplemental information dated June 11 & August 14, 2008 and April 8 & 20, 2009, was submitted requesting a Part 70 Operating Permit modification for the Geismar Plant.

A notice requesting public comment on the proposed permit was published in The Advocate, Baton Rouge, Louisiana, on *[Insert Date]*. The proposed permit was also sent to US EPA Region VI.

### Project Description

The Geismar plant consists of the following three processes:

Specialty Gas Process: This process produces 32.85 billion standard cubic feet (scf) of hydrogen and 4.02 billion scf of carbon monoxide annually by reforming natural gas with steam over a nickel catalyst bed. High temperature product gases, including

hydrogen, carbon monoxide and carbon dioxide, are cooled in the reformer gas boiler to produce high pressure and medium pressure steam. Carbon dioxide is removed by amine absorption/desorption in a MEA (monoethanolamine) section. The synthesis gas stream is further cooled for removal of water before entering a cryogenic cold box for separation into salable gas streams. Hydrogen product is recovered from the top of the first column in the cold box. Liquid methane and carbon monoxide are separated at a further column in the cold box. Carbon monoxide is distributed by pipeline to customers or is stored in cryogenic storage tanks for further use. Methane is either used as fuel or stored in a cryogenic storage tank as a salable product.

Formaldehyde Process: This process produces 112 million pounds of up to 50 percent strength formaldehyde annually. This process uses air and methanol as raw materials. Oxygen in air is reacted catalytically with methanol to produce formaldehyde gas. The formaldehyde gas is absorbed in water and stored as up to 50% strength solutions in heated cone-roof storage tanks.

Methanol Process: This process produces 96.8 million pounds of methanol annually. Carbon monoxide, carbon dioxide and hydrogen gases are used as raw materials in this process. CO, $CO_2$ and $H_2$ are reacted in the presence of the catalyst to produce methanol.

Within the permit application submitted on May 12, 2008, and addendum submitted on June 11, 2008, Praxair proposed the addition of applicable federal requirements and the update of emissions rates for the Methanol Flare (Emission Point No. 2-94).

Within the permit application addendum submitted on August 14, 2008, Praxair requested the following:

1. Replacement of the existing Catalytic Converter Vent (Emission Point No. 3-93) with new equipment that includes emissions from a natural gas fired startup heater. The replacement Catalytic Converter Vent is Emission Point No. 1-08.

2. Update of regulatory applicability related to NESHAP Subparts G and H.
3. Addition of Insignificant Activity – Methanol Tank.
4. Removal of Cooling Tower – Unit 2 (Emission Point No. 4-01).
5. Addition of a new Cooling Tower – Unit 2 (Emission Point No. 2-08).
6. Reconciliation of emissions from the Unit 1 Cold Box West Flare (Emission Point No. 1-89) and Unit 1 Main Flare (Emission Point No. 3-71).
7. Revise the formaldehyde process description to state that this process produces 112 million pounds of up to 45% strength instead of up to 44%

strength formaldehyde annually. This revision is not related to any physical modification or change in the method of operation.

Within the permit application addendum submitted on April 8, 2009, Praxair requested the following:

1. Increase the maximum lb/hr emissions for all pollutants for all the flares, revise emissions for Methanol Flare (Emission Point No. 2-94) to include a vent from a refining column in the Methanol Distillation process.
2. Reconcile the fugitive emissions from the Formaldehyde Plant (Emission Point No. 5-93) and the Methanol Plant (Emission Point No. 8-93) based on an updated component count and VOC speciation.
3. Revise the emissions from the replacement Catalytic Converter Vent (Emission Point No. 1-08) based on changing the hours of operation for the startup heater from 4380 hrs/yr to 8730 hrs/yr.
4. Add emissions from a Tank Truck Unloading Operations –Methanol Plant (Emission Point No. 1-09).
5. Increase maximum lb/hr for the Reformer Flue Gas Stack, Unit 6 (Emission Point No. 9-95) for carbon monoxide (CO), ammonia, and nitrogen oxide ($NO_x$) emissions based on historical CEMs data.
6. Include Cooling Tower –Unit 2 (Emission Point No. 2-08) from General Permit No. 3070-V0 issued on December 8, 2008.
7. Request addition of a Specific Requirement in air permit for the Reformer Flue Gas Stack, Unit 6 (Emission Point No. 9-95) to allow calculations of $NO_x$, CO, and ammonia emissions using an alternative methodology when CEMs are inoperable.
8. Addition of General Condition XVII Emissions.
9. Revise the formaldehyde process description to state that this process produces 112 million pounds of up to 50% strength instead of up to 44% strength formaldehyde annually. This revision is not related to any physical modification or change in the method of operation.
10. Revise the emissions from the formaldehyde tanks to represent the storage of up to 50% strength formaldehyde and increased turnover rates for greater operational flexibility.

**Permitted Air Emissions**

Estimated emissions from the Geismar Plant in tons per year are as follows:

| Pollutant | Before | After | Change |
|---|---|---|---|
| $PM_{10}$ | 64.40 | 64.45 | +0.05 |
| $SO_2$ | 2.23 | 2.23 | - |
| $NO_X$ | 312.93 | 313.57 | +0.64 |
| CO | 243.41 | 248.00 | + 4.59 |
| VOC | 57.36 | 66.41 | + 9.05 |

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**Type of Review**

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, Louisiana Comprehensive Toxic Air Pollutant Emission Control Program, NSPS, and NESHAP. PSD does not apply.

**MACT requirements**

These regulations define maximum achievable control technology (MACT) standards for stationary source categories of hazardous air pollutants (HAPs). These HAPs were listed in the Clean Air Act Amendments of 1990.

Geismar Plant is major source of HAPs, MACT determination is required.

**Air Quality Analysis**

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

**General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities refer to Section VIII of the draft Part 70 permit.

**Insignificant Activities**

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities refer to Section IX of the draft Part 70 permit.

**Regulatory Analysis**

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Table X and XI of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or where provided, Table X and XI of the draft permit

## IV. PERMIT SHIELDS

No permit shield will be granted with the proposed permits.

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## V. PERIODIC MONITORING

No periodic monitoring is required.

## VI. Glossary

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

National Emission Standards for Hazardous Air Pollutants (NESHAPs) - The NESHAPs were originally required by the 1970 Clean Air Act (CAA). These standards were developed for sources and source categories that were determined to pose adverse risk to human health by the emission of hazardous air pollutants (HAPs). The standards are set "at the level which ... provides an ample margin of safety to protect the public health from such hazardous air pollutant." These risk-based NESHAPs are located in 40 CFR 61. The NESHAPs program applies to all existing and new/modified sources. Congress directed EPA to develop a program to develop further the regulation of HAPs in Section 112 of the 1990 Clean Air Act Amendments (CAAA). While the standards for major sources of HAPs developed per this section are also designated as NESHAPs, they are established according to Maximum Achievable Control Technology (MACT). These technology-based NESHAPs are located at 40 CFR 63.

Nitrogen Oxides ($NO_x$) - Compounds whose molecules consist of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per

year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

$PM_{10}$- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO2) – An oxide of sulphur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.

## Louisiana Fugitive Emission Program Consolidation
## Source Notice and Agreement
## Praxair, Inc. – Geismar Plant, Ascension Parish

By this notice and agreement, Praxair, Inc. – Geismar Plant notifies the Louisiana DEQ (LDEQ) and the United States Environmental Protection Agency (EPA) of the consolidation of fugitive emission programs as indicated below, effective May 5, 2009. Semiannual reports will be submitted on August 30 and February 28, to cover the periods January 1 through June 30 and July 1 through December 31, respectively. Praxair, Inc. – Geismar Plant agrees to implement the consolidated program in accordance with the Louisiana Fugitive Emission Program Consolidation Guidelines attached, and accepts federal and state enforceability of the consolidated program by EPA and LDEQ. Praxair, Inc. – Geismar Plant further acknowledges that compliance with the consolidated program in accordance with the Guidelines will serve to comply with each of the fugitive emission programs being consolidated. In addition, Praxair, Inc. – Geismar Plant acknowledges that noncompliance with the consolidated program in accordance with the Guidelines may subject Praxair, Inc. – Geismar Plant to enforcement action for one or more of the fugitive emissions programs being consolidated. Unless successfully challenged or otherwise terminated, this agreement remains in effect until revised or replaced upon request by Praxair, Inc. – Geismar Plant, LDEQ, or EPA, or until the initial Part 70 permit is issued for Praxair, Inc. – Geismar Plant, whichever is earliest. If, at any time, the agreement is not in effect with the State, then it shall not be in effect with EPA.

| Unit or Plant Site | Programs being Consolidated | Stream Applicability | Overall Most Stringent Program |
|---|---|---|---|
| Methanol Plant | LAC 33:III.2122<br>40 CFR 60 Subpart VV<br>40 CFR 63 Subpart H | 10% VOC<br>10% VOC<br>5% VOHAP | 40 CFR 63 Subpart H |
| Formaldehyde Plant | LAC 33:III.2122<br>40 CFR 60 Subpart VV<br>40 CFR 63 Subpart H | 10% VOC<br>10% VOC<br>5% VOHAP | 40 CFR 63 Subpart H |

Signed

This ___5th__ day of __May___, 2009__